Remarks

I. Status of claims

Claims 1-24 are pending.

II. Claim rejections under 35 U.S.C. § 103 - Part 1

The Examiner has rejected claims 1-17 under 35 U.S.C. § 103(a) over Muralidharan ("Dynamic Routing and Service Network Design for Less-Than-Truckload (LTL) Motor Carriers").

A. Overview of Muralidharan's disclosure

Muralidharan discloses a simulator that allows a user to understand interactions between the shipment route, trailer closing rules, cost, and service level in less-than-truckload (LTL) carriers in a fixed line-haul network of end-of-line terminals, break terminals, and interconnection routes (see page 24, second ¶, and page 4). Before a simulation is run, inputs, including the fixed line-haul network and the trailer characteristics, are entered into the simulator (see page 26 § 3.2.2). The simulator is implemented using an object-oriented approach that includes a respective object for each trailer, bill, origin-destination (OD) pair, and terminal (see § 3.3). These objects contain the information about the current states of the respective entities in the simulation (see § 3.3, pages 32-33). The buckets in the trailer, OD, and terminal objects are implemented using heap data structures. According to Muralidharan, the following output is produced by the simulator:

- List of trailers dispatched and related information
- OD statistics. such as the number of trailers closed. number of bills. weight of bills. and loading time.
- Bill statistics. such as number of bills delayed. transfer ratio. and average delay.
- Trailer statistics. such as capacity filled. number of bills. breakdown of closed / unloaded trailers. and trailer miles traveled.

B. Independent claim 1

Independent claim 1 has been amended and now recites:

> 1. A computer-implemented method of allocating freight haulage jobs, comprising:
>
> receiving from a first entity a respective set of capacity attributes for each of one or more freight-hauling mobile carrier entities on route to respective destinations for respective current freight haulage jobs, wherein each of the transmitted sets of capacity attributes comprises position information, route information and excess capacity information specifying current available freight-hauling capacity of the respective mobile carrier entity;
>
> computing a projection of future available carrier capacity based upon the received mobile carrier capacity attributes;
>
> receiving from a second entity a respective specification for each of one or more freight haulage jobs;
>
> determining ones of the mobile carrier entities that match respective ones of the freight haulage jobs based upon the computed projection of future available carrier capacity and the specifications of the freight haulage jobs; and
>
> transmitting to the second entity a notification of one or more of the matching mobile carrier entities.

Muralidharan does not disclose "receiving from a first entity a respective set of capacity attributes for each of one or more freight-hauling mobile carrier entities on route to respective destinations for respective current freight haulage jobs," as now recited in claim 1. In support of the rejection of claim 1, the Examiner has taken the position that the "trailer object" in Muralidharan's simulator constitutes a mobile carrier entity. Contrary to the Examiner's position, however, the trailer object is not a mobile carrier entity, much less a mobile carrier entity that is on route to a respective destination for a respective current freight haulage job. Instead, the "trailer object" is simply a heap data structure that stores certain information as the simulation is run (see § 3.3 on pages 32-33).

Muralidharan also does not disclose "computing a projection of future available carrier capacity based upon the received mobile carrier capacity attributes," as now recited in claim 1. Instead, Muralidharan's simulator only calculates the current capacity of each trailer

at the current terminal; the concept of future available capacity is not implicated in Muralidharan's simulator.

Muralidharan also does not disclose "receiving from a second entity a respective specification for each of one or more freight haulage jobs," as now recited in claim 1. Instead, the same person running the simulation would input the trailer characteristics and the shipment information (see § 3.2.2, page 26).

Muralidharan also does not disclose transmitting to the second entity a notification of one or more of the mobile carrier entities that are determined to match one or more of the freight haulage jobs, as now recited in claim 1. The simulator does not output the shipments that were assigned to individual ones of the trailer objects. Instead, the simulator only outputs a list of trailers, OD statistics, bill statistics, and trailer statistics (see § 3.2.6, page 32).

It is noted that neither Muralidharan nor the Examiner explains how the heap data structure implementing the "trailer object" in Muralidharan's simulator correlates with the behavior of a mobile carrier entity. For example, the fact that the simulator reads certain information from the trailer object heap structure during a simulation does not teach or suggest anything whatsoever that would have led one skilled in the art at the time the invention was made to modify the operations of an LTL carrier to receive from a first entity a respective set of capacity attributes for each of one or more freight-hauling mobile carrier entities on route to respective destinations for respective current freight haulage jobs.

For at least these reasons, the rejection of claim 1 under 35 U.S.C. § 103(a) over Muralidharan should be withdrawn.

C. Claims 2-9

Each of claims 2-9 incorporates the elements of independent claim 1 and therefore is patentable over Muralidharan for at least the same reasons explained above. Claims 8 and 9 also are patentable over Muralidharan for the following additional reasons.

1. Claim 8

Claim 8 recites "further comprising computing an amount of capacity available on a given ones of the mobile carrier entities based upon excess capacity information received from the given mobile carrier entity."

In support of the rejection of claim 8, the Examiner has indicated that Muralidharan discloses the elements of claim 8 on page 29, lines 9-14 and page 32, lines 14-18. The cited disclosure, however, does not disclose "computing an amount of capacity available on a given ones of the mobile carrier entities based upon excess capacity information received from the given mobile carrier entity." Indeed, the "trailer object" in Muralidharan's simulator is not a mobile carrier entity. Instead, the "trailer object" is simply a heap data structure that stores certain information as the simulation is run (see § 3.3 on pages 32-33).

2. Claim 9

Claim 9 depends from claim 8 and therefore is patentable over Muralidharan for at least the same additional reasons explained above.

D. Independent claim 10

Independent claim 10 recites:

> 10. A computer program for allocating freight haulage jobs, the computer program residing on a computer-readable medium and comprising computer-readable instructions for causing a computer to:
>
> receive from one or more users respective capacity attributes, including position information, route information and excess capacity information specifying available freight-hauling capacity, for each mobile carrier entity in a set of freight-hauling mobile carrier entities;
>
> compute a projection of available carrier capacity based upon the received mobile carrier capacity attributes; and
>
> identify one or more freight haulage job candidates from the set of mobile carrier entities based upon the computed projection of available carrier capacity and shipping attributes for each of a set of freight haulage jobs.

Muralidharan does not disclose that the simulation program includes computer-readable instructions for causing a computer to "receive from one or more users respective capacity attributes, including position information, route information and excess capacity information specifying available freight-hauling capacity, for each mobile carrier entity in a set of freight-hauling mobile carrier entities," as recited in claim 10.

Although the simulator receives some information from a user (see page 26, § 3.2.2), the user does not input position information and excess capacity information specifying available freight-hauling capacity for each mobile carrier entity in a set of freight-hauling mobile carrier entities. Instead, the simulator calculates this information.

In addition, although the "trailer object" in Muralidharan's simulator stores certain information (see page 32 § 3.3), the trailer object is not a user. Instead, the "trailer object" is simply a heap data structure that stores certain information as the simulation is run (see § 3.3 on pages 32-33). It is noted that neither Muralidharan nor the Examiner explains how the heap data structure implementing the "trailer object" in Muralidharan's simulator correlates with the behavior of a mobile carrier entity. For example, the fact that the simulator reads certain information from the trailer object heap structure during a simulation does not teach or suggest anything whatsoever that would have led one skilled in the art at the time the invention was made to modify the operations of an LTL carrier to receive from one or more users respective capacity attributes, including position information, route information and excess capacity information specifying available freight-hauling capacity, for each mobile carrier entity in a set of freight-hauling mobile carrier entities.

Muralidharan also does not disclose that the simulator includes computer-readable instructions for causing a computer to "compute a projection of available carrier capacity based upon the received mobile carrier capacity attributes." Instead, Muralidharan's simulator only calculates the current capacity of each trailer at the current terminal; the concept of computing a projection of available capacity is not implicated in Muralidharan's simulator.

For at least these reasons, the rejection of claim 1 under 35 U.S.C. § 103(a) over Muralidharan should be withdrawn.

E. Claims 11-17

Each of claims 11-17 incorporates the features of independent claim 10 and therefore is patentable over Gaspard and the unsubstantiated prior art for at least the same reasons explained above.

III. Claim rejections under 35 U.S.C. § 103 - Part 2

The Examiner has rejected claims 18-24 under 35 U.S.C. § 103(a) over Muralidharan in view of Leavitt ("All Work and Play").

A. Independent claim 18

Claim 18 recites:

> 18. A portable device, comprising:
>
> a portable housing incorporating a display screen and one or more control buttons;
>
> a memory in the housing;
>
> a wireless transceiver in the housing;
>
> a positioner in the housing and operable to compute position information;
>
> a scanner in the housing and operable to direct a light beam at a symbol and to recover information embedded in the symbol based upon detected reflections from the symbol; and
>
> a controller in the housing and coupled to the memory, the wireless transceiver, the positioner, and the scanner and operable to obtain from the scanner capacity attributes, including position information, route information and excess capacity information, for a mobile carrier entity and to control wireless transmission of the capacity attributes through the wireless transceiver in accordance with a mobile wireless communication protocol.

In the rejection of independent claim 18, the Examiner has acknowledged that Muralidharan does not disclose any of the elements of claim 18 (see page 10, third paragraph).

The Examiner has relied on Leavitt to make-up for the failure of Muralidharan to teach or suggest any of the elements of claim 18. Regarding the "controller" element of claim 18, for example, the Examiner has stated that (page 12, lines5-10):

> Page 76 column 2 para 2,3; the modem communication is according to a mobile wireless communication protocol (i.e. COPO or COMA). The truck productivity computer is coupled to the memory, the modem (i.e. the transceiver) and the bar code scanner and can perform a multiplicity of functions including (page 76 column 3 para 1) transmitting position information and downloading and transmitting information (i.e. capacity attributes) from bar code scanners.

The Examiner's statement implicitly assumes that one skilled in the art at the time the invention was made would have known that a scanner could capture the capacity attributes recited in claim 18. The Examiner, however, has not provided any basis for this assumption, either in the cited references or in the knowledge generally available at the time the invention was made.

In addition, neither Muralidharan nor Leavitt provides any support for the Examiner's assumption that the Truck Productivity Computer described in Leavitt <u>is operable</u> to obtain from a scanner capacity attributes, including position information, route information and excess capacity information, for a mobile carrier entity and to control wireless transmission of the capacity attributes through the wireless transceiver in accordance with a mobile wireless communication protocol. Even assuming for the purpose of argument that the scanner described in Leavitt captured the capacity attributes recited in claim 18, there is no reasonable basis for the Examiner's implicit assumption that the Truck Productivity Computer would know what to do with that information. That fact is that the Truck Productivity Computer would not be operable to perform the functions recited in claim 18 unless it specifically was programmed to perform these functions. Leavitt, however, does not disclose or suggest that the Truck Productivity Computer is programmed to perform any of these functions.

In support of the proposed modification of Muralidharan, the Examiner has stated that:

> One of ordinary skill in the art would modify the teachings of Muralidharan, regarding obtaining information from a specific trailer noting the position of the trailer and the available capacity on the trailer, both in terms of weight and freight, to

> include the teachings of Leavitt, regarding providing the mobile wireless computing technology (including barcoding) to provide information from the truck including regarding it's position, because it would improve the operation of a trucking network by enhancing the real time dynamic decision tool taught by Muralidharan regarding optimizing a shipping network.

This statement does not provide any basis for the assumption that one skilled in the art at the time the invention was made would have known that a scanner could capture the capacity attributes recited in claim 18.

In addition, Muralidharan's simulator has all the information it needs to determine whether the minimum and maximum capacity levels of the trailer are reached (see, e.g., page 8, lines 1-4). For example, the simulator receives the trailer characteristics as an input (see § 3.2.2, page 26) and calculates the current total volume and weight associated with each trailer object and stores that information in a heap data structure during each simulation (see § 3.3). Therefore, contrary to the Examiner's position, one skilled in the art at the time the invention was made would not have had any apparent reason to modify the teachings of Muralidharan as proposed by the Examiner because such a modification would not have had served any useful purpose whatsoever.

The fact is that Muralidharan's simulator is designed to <u>simulate</u> the operations of an LTL carrier over a period of time (e.g., 15 days; see page 24, second paragraph). The results of the simulations are used to obtain an understanding of the complicated interactions between the shipment route, closing rules, cost, and service level (see page 24, bottom paragraph). Muralidharan's simulator must maintain control over the calculation of the current total volume and weight associated with the trailer object because this information controls how the model progresses from state to state and thereby reveals how changes in the input parameters affect the outcome of the simulation. If this information varied based on inputs from mobile entities, as proposed by the Examiner, there would not be any correlation between the changes made to the inputs to the simulator and the resulting output. That is, the Examiner's proposed modification of Muralidharan's simulator would render it unusable for its intended purpose. Such a modification hardly would have been apparent to one skilled in the art at the time the invention was made.

For at least the reasons explained above, the rejection of claim 18 under 35 U.S.C. § 103(a) over Muralidharan in view of Leavitt should be withdrawn.

B. Independent claims 19-20

Each of claims 19 and 20 incorporates the features of independent claim 18 and therefore is patentable over Muralidharan in view of Leavitt for at least the same reasons explained above.

C. Independent claims 21-24

Each of claims 21-24 incorporates the elements of independent claim 1. Leavitt does not make-up for the failure of Muralidharan to disclose or suggest the elements of claim 1 discussed above. Therefore, claims 21-24 are patentable over Muralidharan and Leavitt for at least the same reasons explained above in connection with independent claim 1.

Claims 21 and 23 also are patentable over Muralidharan and Leavitt for the following additional reasons.

1. Claim 21

Claim 21 recites that "the receiving from the first entity comprises prompting the first entity to enter the respective capacity attributes."

The Examiner has not established that either Muralidharan or Leavit discloses the elements of claim 21 (see pages 14-15). Nevertheless, the Examiner has concluded that (see page 15):

> It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Muralidharan, regarding computing excess capacity based on the weight and volume capacity of a truck and the associated pieces of freight the truck is carrying, to include where this information comes when prompted by the user to enter it, because Muralidharan teaches that obtaining dynamic information from a truck in an LTL network helps optimize that network, and Leavitt teaches that providing trucks with wireless applications provides real-time information about all aspects of the truck (including the load -see page 75 column 1 para 2) and that users can be prompted via messaging to enter information about their truck. There is a reasonable expectation

> of success in combining Muralidharan with Leavitt because it would enable the real-time, dynamic optimization of a freight network by receiving load information from a truck through the wireless communication hardware taught by Leavitt.

As explained above, however, Muralidharan's simulator is designed to <u>simulate</u> the operations of an LTL carrier over a period of time (e.g., 15 days; see page 24, second paragraph). The results of the simulations are used to obtain an understanding of the complicated interactions between the shipment route, closing rules, cost, and service level (see page 24, bottom paragraph). Muralidharan's simulator must maintain control over the calculation of the current total volume and weight associated with the trailer object because this information controls how the model progresses from state to state and thereby reveals how changes in the input parameters affect the outcome of the simulation. If this information varied based on inputs from mobile entities, as proposed by the Examiner, there would not be any correlation between the changes made to the inputs to the simulator and the resulting output. That is, the Examiner's proposed modification of Muralidharan's simulator would render it unusable for its intended purpose. Such a modification hardly would have been apparent to one skilled in the art at the time the invention was made.

<u>2. Claim 23</u>

Claim 23 recites "receiving respective haulage rates from ones of the immobile carrier entities, wherein the selecting is based at least in part on the received haulage rates."

In support of the rejection of claim 23, the Examiner has stated that:

> Page 35 para 3.5 line 1-3, the selection of trailers is based at least in part based on their cost (i.e. their rate) and the effect that selection has (based on a host of other factors as well) has on the overall system cost. -see also page 52 line 20, the cost of an individual trailer is based on the cost of its routing (i.e. a haulage rate for that individual trailer).

This statement, however, does not establish a *prima facie* case of obviousness under 35 U.S.C. § 103 because it does not show that the cited references or the knowledge generally available at the time the invention was made disclosed or suggested "receiving respective haulage rates from ones of the immobile carrier entities." For at least this additional reason, the rejection of claim 23 should be withdrawn.

In addition, there is no basis for the Examiner's assumption that "the selection of trailers is based at least in part based on their cost." In accordance with Muralidharan's teachings, the trailer objects are filled up to their minimum or maximum capacity levels depending on the applicable trailer closing policy (see, e.g., § 3.5.5, beginning on page 40). This determination is made, however, without regard to a cost that is associated with any particular one of the trailer objects. The cost values that are calculated during each simulation are used instead to determine that total cost values that provide metrics for understanding the complicated interactions between the shipment routes, closing rules, cost, and service level (see page 24, bottom paragraph).

Finally, none of the cost values disclosed in Muralidharan constitutes a "haulage rate" as recited in claim 23. If the Examiner persists with this rejection of claim 23, applicant asks the Examiner to point specifically to a "cost" value disclosed in Muralidharan that constitutes a "haulage rate."

IV. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

Respectfully submitted,

Date: August 28, 2007

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